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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/106,994	06/29/1998	TONIA G. MORRIS	INTL-0061(P5	7440

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03/14/2003

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EXAMINER

WHIPKEY, JASON T

ART UNIT

PAPER NUMBER

2612

14

DATE MAILED: 03/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/106,994

Applicant(s)

MORRIS ET AL.

Examiner

Jason T. Whipkey

Art Unit

2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-6,8-10 and 18-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,8-10 and 18-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 1998 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Prosecution Application

1. The request filed on December 20, 2002, for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/106,994 is acceptable and a CPA has been established. An action on the CPA follows.

Response to Amendment

2. The declaration filed on December 20, 2002, under 37 CFR 1.131 is sufficient to overcome the Böhm reference.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 18 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Baker.

Regarding claim 18, Baker shows a pixel sensor in Figure 2. The detector element 1 produces a current signal that is integrated by alternately switchable capacitors 2a and 2b (column 9, lines 34-45). Flip-flop circuit 17 alternately couples detector element 1 to capacitor 2a and capacitor 2b (column 10, lines 28-42). Therefore, capacitor 2a integrates charge during a first integration interval and capacitor 2b integrates charge during a second integration interval.

Regarding claim 21, Baker teaches that the pixels may be arranged in an array (column 4, lines 18-23).

5. Claims 22-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Elabd.

Regarding claim 22, Elabd discloses an image sensor with an array 480 of photosensitive elements 484 (Figure 3). The entire resolution of the imager may or may not be used to capture red, green, and blue images (column 4, lines 57-59). Storage location 490 may be used to individually store the RGB images captured by elements 484 (column 5, lines 21-25).

Regarding claims 23 and 24, Elabd shows in Figure 3 that that storage location 490 stores charges associated with the primary colors red, green, and blue.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1, 4, 6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elabd in view of Baker.

Regarding claim 1, Elabd discloses an image sensor with an array 480 of photosensitive elements 484 (Figure 3). The entire resolution of the imager may or may not be used to capture red, green, and blue images (column 4, lines 57-59). Storage location 490 may be used to individually store the RGB images captured by elements 484. Elabd teaches that charges from successive RGB exposures are stored sequentially in register 490 (column 5, lines 21-25).

Elabd is silent with regard to coupling the photosensitive elements to the storage locations during the integration intervals.

Baker shows a pixel sensor in Figure 2. The detector element 1 produces a current signal that is integrated by alternately switchable capacitors 2a and 2b (column 9, lines 34-45). Flip-flop circuit 17 alternately couples detector element 1 to capacitor 2a and capacitor 2b (column 10, lines 28-42). Therefore, capacitor 2a integrates charge during a first integration interval and capacitor 2b integrates charge during a second integration interval.

As stated in column 9, lines 46-52, an advantage to using a storage location to integrate current from a photodetector element directly is that the photodetector element may be operated continuously, since the photodetector need not halt operation in order to transfer integrated charge. For this reason, it would have been obvious at the time of invention to have Elabd's sensor integrate charge directly in the storage locations.

Regarding claim 4, Elabd teaches that analog charges are stored (column 2, lines 62-65).

Claim 6 may be treated like claim 1. In addition, filters 462 in wheel 460 are used in front of the image sensor (column 2, lines 45-49). Interface device 92 controls the filter wheel 82 (column 9, lines 11-13).

Claim 9 may be treated like claim 4.

9. Claims 3, 5, 8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elabd in view of Baker and further in view of Yanai.

Claims 3 and 5 may be treated like claim 1, and claims 9 and 10 may be treated like claim 6. In all of these claims, however, Elabd and Baker are silent with regard to including an A/D converter in the circuitry of each pixel sensor.

Yanai discloses an image pickup device with pixels as shown in Figure 34. Each pixel includes an A/D converter 11, which allows a digital signal to be stored in the pixel's shift register 12. As stated in column 29, lines 32-37, this reduces the amount of analog information transfer, resulting in an image of higher quality. Therefore, it would have been obvious to have Elabd's image sensor perform A/D conversion within each pixel.

10. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baker in view of Elabd.

Claim 19 may be treated like claim 18. However, Baker is silent with regard to the two integrations occurring while capturing two different primary color components.

Elabd discloses an image sensor with an array 480 of photosensitive elements 484 (Figure 3). The entire resolution of the imager may or may not be used to capture red, green, and blue images (column 4, lines 57-59). Storage location 490 may be used to individually store the RGB images captured by elements 484. Elabd teaches that charges from successive RGB exposures are stored sequentially in register 490 (column 5, lines 21-25).

An advantage to using the same pixel to capture different color components is that an image three times the resolution of a similar sized image sensor with fixed color

filters may be captured. For this reason, it would have been obvious at the time of invention to have Baker store different primary color components.

11. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baker in view of Yanai.

Claim 20 may be treated like claim 18. However, Baker is silent with regard to including an A/D converter in the circuitry of each pixel sensor.

Yanai discloses an image pickup device with pixels as shown in Figure 34. Each pixel includes an A/D converter 11, which allows a digital signal to be stored in the pixel's shift register 12. As stated in column 29, lines 32-37, this reduces the amount of analog information transfer, resulting in an image of higher quality. Therefore, it would have been obvious to have Baker's image sensor perform A/D conversion within each pixel.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason T. Whipkey, whose telephone number is (703) 305-1819. The examiner can normally be reached Monday through Friday from 9 A.M. to 6:30 P.M. eastern standard time, alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R. Garber, can be reached on (703) 305-4929. The fax phone

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number for the organization where this application or proceeding is assigned are (703) 872-9314 for both regular communication and After Final communication.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, whose telephone number is (703) 306-0377.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231


or faxed to (703) 872-9314 for either formal or informal communications intended for entry. (For informal or draft communications, please label "**PROPOSED**" or "**DRAFT**".)

Hand-delivered responses should be brought to the sixth floor receptionist of Crystal Park II, 2121 Crystal Drive in Arlington, Virginia.

JTW

JTW

March 6, 2003


WENDY R. GARBER
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